WORK PLAN
FOR THE FIRST OPERABLE UNIT
OF THE REMEDIAL ACTION AT THE
AMERICAN THERMOSTAT SITE
-ALTERNATE WATER SUPPLY-

EPA WORK ASSIGNMENT NO. 023-2R77
MARCH 1992

REGION II

Alternative Remedial Contracting Strategy (ARCS)
for
Hazardous Waste Remedial Services

EPA Contract No. 68-S9-2001

TAMS CONSULTANTS, Inc.

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1. PROJECT OBJECTIVES

The purpose of this Work Assignment is to implement the First Operable Unit of the Remedial Action designed by TAMS Consultants, Inc., (TAMS) for the US Environmental Protection Agency (USEPA) under the Work Assignment No. 019-2N77. The work includes selecting a Subcontractor, awarding a subcontract, managing the construction effort and providing technical and administrative support to the USEPA.

2. PROJECT BACKGROUND

The AT site covers approximately 8 acres within a rural residential area in the Town of Catskill, Greene County, New York.

From 1954 to 1985, the primary activity at the site was the assembly of thermostats for small appliances. In the plant operation, a series of chemicals including machine oils, lubricants, and organic solvents such as tetrachloroethane (PCE) and trichloroethene (TCE) were used within the manufacturing process to operate and clean the plan machinery. During the 1960s and 1970s, waste PCE and TCE sludge were poured down drains inside the building septic systems and dumped outside on the plant grounds for dust control. In March 1981, two employees were observed dumping solvents on plant property. This let to investigations into the company's waste handling practices by the New York State Department of Environmental Conservation (NYSDEC) and the New York State Attorney General's Office.

During April and May 1981, water samples were collected from several residential wells in the vicinity of the AT site by the New York State Department of Health (NYSDOH) and NYSDEC. The analyses of the samples indicated the presence of TCE and PCE in five wells. The affected residents were advised by NYSDOH not to use their well water for cooking or drinking purposes. Several law suits were filed by the plant's neighbors in late 1981.

Because of the presence of high levels of PCE in several nearby wells, AT began supplying bottled water to local residents in April 1982. By November 1982, AT had installed carbon filters on its own well and the five affected wells. The nearest neighbors, the Rath's were connected to AT's water system.

In February 1983, New York State entered into an interim consent order with AT and Amro Realty Corporation (property owner) in which the companies agreed to clean up the site and its surrounding, to supply bottled water to the five affected residences for cooking and drinking, and to install, monitor, and maintain carbon

filter systems for these residences. The order also stipulated that two groups of bordering private wells had to be monitored to determine whether any contamination had spread beyond the original affected area.

In May 1985, AT ceased operations. Since June 1985, USEPA has been sampling wells in the area and has been maintaining the previously installed carbon filtration units. In addition, USEPA installed new carbon units on two contaminated private wells and installed air stripping systems on two highly contaminated wells.

In April 1986, NYSDEC requested that USEPA assume responsibility for the operation and maintenance costs of the carbon filters that had been previously installed, and the installation and operation of airlift stripping systems at two existing wells. The stripping systems have treated, to date, over 7 million gallons of contaminated groundwater, PCE concentrations have been reduced in the Rath well from a high of 131,000 to 25,000 parts per billion (ppb), and in the AT well from 3,200 to 400 ppb.

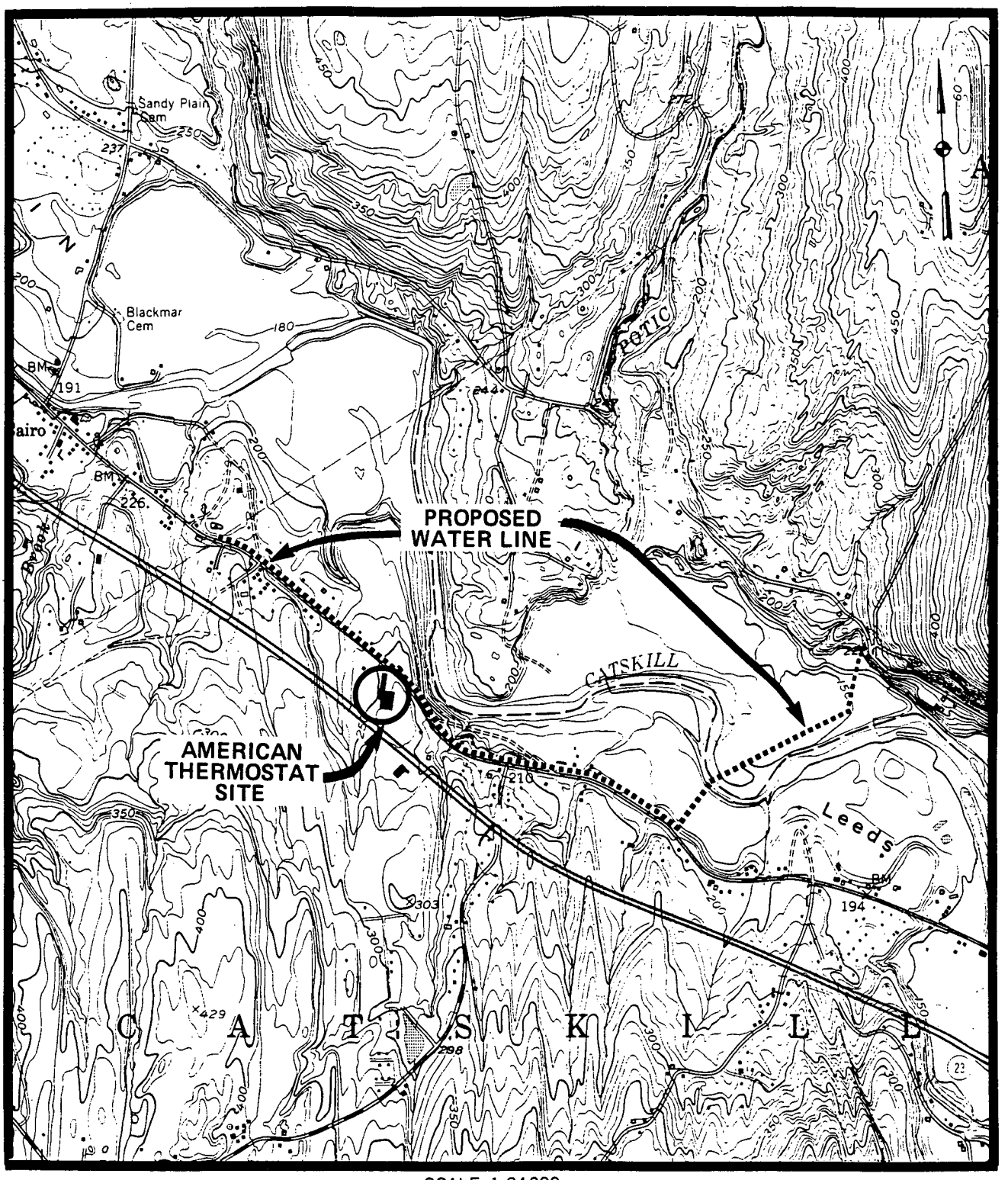
A Focused Feasibility Study (FFS) for an Alternate Water Supply was issued in November 1987. The purpose of the FFS was to develop, screen, and evaluate various alternatives for a new water supply system for the affected and potentially affected residences at the AT site.

In January 1988, based in part on the FFS, the USEPA signed a Record of Decision selecting the extension of the Village of Catskill's water supply to the affected and potentially affected residences as the first operable unit of a permanent remedy for the AT site.

The alternate water supply remedial design was completed in mid-September 1991. The Subcontract for construction of the alternate water supply was awarded in October 1991.

3. PROPOSED CONSTRUCTION

The Project consists of providing a water supply for the affected residents by means of an extension of the Village of Catskill water supply pipeline to the affected area. The new water line will be tied to the existing pipeline in the vicinity of Sandy Plains Road in the Town of Athens, New York. The new 10-inch pipeline will be routed in a southwesterly direction towards Route 23B; it will then follow the alignment of Route 23B to supply home along its route. The first stretch of the waterline route, from Sandy Plains Road to Route 23B will require two stream crossings, the Catskill creek and the Potic creek. The new water supply system will be



SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

LEEDS, N. Y.
42073-C8-TF-024

1953
PHOTOREVISED 1980
DMA 6268 IV SW -SERIES V821

LOCATION MAP

FIGURE NO. 1

TAMS CONSULTANTS, Inc.

a gravity system and will provide fire protection in the new Water District along Route 23B.

The following is a list of the main work items required for the construction of the water supply in the Town of Catskill new Water District:

- 10-inch tap into existing 16-inch C.I. pipe;
- in wooded areas, clearing of a 20-foot wide corridor centered on the waterline alignment;
- trench installation of approximately 11,400 feet of 10-inch D.I. pipe, including two river crossings, 7,600 feet along Route 23B and 3,800 feet throughout wooded area;
- trench installation of approximately 1,000 feet of 6-inch D.I. pipe;
- trench installation of approximately 10,300 feet of 3/4-inch to 2-inch service piping;
- installation of miscellaneous gate valves, fire hydrants, backflow preventer, air release valves, corporation stops and curb ball valve stops; and,
- installation of metering devices complete with all remote registers, piping, insulation, excavation, wiring, core drilling, valve boxes and similar related work necessary to complete same.
- providing connection between the new branch lines and the existing dwelling service.

All work to be performed for the installation of the 10-inch pipe at the river crossings will be done during the period of low flow (June to September).

4. TECHNICAL APPROACH

The overall management of the work will be performed by the TAMS' Waste Management Department which has the responsibility for the ARCS contracting.

The Site Manager based in TAMS' office will coordinate construction activities, technical and contractual matters with the Resident Engineer and the Subcontract Administrator, and will inform the USEPA's Remedial Project Manager of the construction progress on a regular basis.

The Resident Engineer will be appointed to the site for the duration of the site activities. The Site Manager will be responsible for inspecting the work to verify that it is performed in accordance with the Technical Specifications and for measuring the work progress for the purpose of payment. The Resident Engineer will be assisted at the site by a Construction Inspector. The Site Manager and the Subcontract Administrator will provide technical and contractual support on an as-needed basis.

The Community Relations program initiated during the previous Work Assignment will be pursued as required, with TAMS Community Relations Coordinator.

5. SCOPE OF WORK

The activities described below correspond with those used for the estimates of level of effort and cost which are provided under separate cover. The three tasks have been further subdivided into subtasks for better cost control and personnel management.

5.1 Task 1 Pre-Construction Management

Under this initial task TAMS selects a Subcontractor and awards a subcontract for the Implementation of the Remedial Action.

Subtask 1-1 Project Planning

TAMS prepares a detailed Work Plan, Level of Effort and cost estimates and schedule for the Project. Projected activities and schedule will be re-evaluated on a regular basis, as required.

TAMS will prepare written monthly progress reports which:

- describe the actions taken towards completion of construction;
- describe the actions scheduled for the next month; and
- include information regarding percentage of completion, delays encountered or anticipated and description of the efforts made to mitigate those delays.

Subtask 1-2 Community Relations

The Community Relations Plan will be updated as necessary. TAMS will also provide technical support services to the USEPA in preparing for and performing Community Relations activities.

A public meeting to present the final plans and inform the Community about the bidding process, and construction activities was held on November 14, 1991.

Subtask 1-3 Permitting and Issuance of Subcontract Documents

TAMS will provide technical assistance to address remaining regulatory and access issues not resolved during the design stage of the Project.

In particular, TAMS will conduct a delineation of wetlands and perform a wetlands assessment to determine what areas will be affected and how they will be restored.

The Stage IB Cultural Resources Survey identified during the design, will also be performed. This survey consists of a field reconnaissance including excavations along the portion of the new waterline between Sandy Plains Road and Route 23B that has been deemed highly sensitive to the presence of cultural materials.

Under this subtask, the Subcontract Documents has been finalized to incorporate the latest FAR and EPAAR clauses, and the agency's comments.

Subtask 1-4 Bidding Process and Subcontract Award

To attract competitive bids, the Project has been advertized in the Commerce Business Daily (CBD). Prospective qualified bidders were requested to transmit a letter stating their interest in bidding the Project. On September 3, one set of the updated Subcontract Documents was sent to each qualified bidder.

On September 10, TAMS organized a mandatory Prebid site visit with the prospective bidders.

On September 20, a bid opening session where the total bid amounts were publicly read was held in TAMS' office.

All bids have been checked for arithmetic error and tabulated so as to compare individual bid items as well as the total bid amount, with the Engineer's Estimate and to identify unbalanced bids. The submitted Subcontract Documents were also verified for any irregularities, informalities, non-responsive items or qualifications.

Upon completion of the bid evaluation, TAMS obtained USEPA's consent to award the Subcontract to the lowest responsible, responsive bidder: F.G. Compagni Construction Company, Inc. A Notice To Proceed was given on December 17, 1991. At that time, Modification No.1 defining the Project as per the Village of Catskill request, i.e. as a gravity system without storage tank and pump station, was given to Compagni along with a request for revised prices.

Subtask 1-5 Easements

Mapping of easements for construction of the 10-inch water main, through private properties between Sandy Plains Road and Route 23B has been performed under the previous work assignment (No. 019-2N77). Legal descriptions of these easements were provided to the Town of Catskill and negotiation with property owners are believed to have been initiated.

The 10-inch water main will be installed along Route 23B within the road right-of-way. An application for Permit to do Work on and within a County Road area was submitted to the Greene County Highway Department. The application for the permit has been approved subject to submittal of a complete set of the project plans to the Department.

Right-of-way on private property will also be required where water pipe is shared by more than one property owner. Legal description of these easements will be provided to the Town of Catskill. TAMS will subcontract the surveying work to GEOD Corporation which satisfactorily performed similar services under the previous work assignment.

TAMS Subcontract Administrator will liaise with USEPA Region II contracts and legal officers and the Town of Catskill's attorney in drafting a subcontract to facilitate the reimbursement of the costs of legal services and associated expenses for securing the easements and rights-of-way for this project.

TAMS Site Manager will coordinate the overall effort so that the construction subcontract is not delayed. Should difficulties arise in securing agreements with property owners such that construction delays become likely, TAMS will recommend that the USEPA pursue these directly with the Town of Catskill through the exercise of its eminent domain authority.

Subtask 1-6 Capital Costs Reimbursement

TAMS Subcontract Administrator will process a utility services subcontract with the Village of Catskill in accordance with the revised statement of work dated October 21, 1991 and the attached MEMORANDUM OF AGREEMENT. TAMS will request

consent from the USEPA Contracting Officer prior to making any payment to the Village pursuant to this subcontract. It is specifically noted that the conditions relating to this capital costs reimbursement are independent of the construction subcontract.

5.2 Task 2. Construction Management

Subtask 2-1 Pre-Work Meetings and Post Design Support

Following the Subcontract Award, and possibly prior to issuing the Notice to Proceed, two meetings will be organized between TAMS' key Project personnel and the Subcontractor's Project Manager, Superintendent and Quality Control Manager. USEPA's Remedial Project Manager and/or Field Representative will be invited to attend. The purpose of these meetings is to review administrative matters such as site security, submittal items and procedures, progress schedules, network analysis system and payment and procurement of materials.

Prior to the second meeting the Subcontractor will be requested to deliver all major submittals. These documents will be reviewed during the meeting to provide TAMS and the USEPA a general understanding of the salient points prior to initiating the review process.

Questions concerning administrative and/or technical requirements or any other aspect of the project may also be addressed at these meetings.

With the Notice of Award, the Subcontractor will be requested to provide the Performance Bond made out in favor of TAMS.

Subtask 2-2 Community Relations

During the construction phase of this Project, TAMS will continue to provide the required assistance to the USEPA in performing Community Relations activities.

No Public Meeting is anticipated to be needed during that phase of the Project.

Subtask 2-3 Submittal Review

The submittal procedures detailed in the Subcontract Documents will be enforced by the Resident Engineer. The review of the Subcontractor's submittals for compliance with the Project plans and specifications will include proposed schedule, shop drawings, material samples, catalog cuts, test results, etc. These items will generally be reviewed by the Resident Engineer. For a few specialized

items, the Resident Engineer will request the designer to review the submitted documents.

Subtask 2-4 Quality and Progress Control

Project offices will be provided by the Subcontractor at the AT site for use by TAMS' Resident Engineer and the USEPA's Field Representative.

The prime function of the construction inspection will be to verify that the Subcontractor performs in accordance with the plans and specifications and within the project schedule.

TAMS' Resident Engineer and Construction Inspector will perform the following duties for the duration of the construction activities:

- Maintain daily reports
- Take progress photographs
- Attend weekly progress meetings
- Review submittal
- Monitor construction activities
- Monitor the Subcontractor measures protecting the environment
- Verify and approve monthly quantity measurement
- Evaluate change order request.

During construction, it is inevitable that the Subcontract Documents will require interpretation and clarification. To keep delays to a minimum, field orders will be given for any item that does not impact cost, time or quality of work. These issues will most commonly arise at the weekly progress meetings. As part of the weekly meetings minutes, any items requiring clarifications will be itemized.

Subtask 2-5 Measurement and Payment

The Subcontractor progress will be monitored by the Resident Engineer on a daily basis through inspection. The Subcontractor will report progress at the weekly progress meetings and at any other time as requested by the Resident Engineer or the USEPA's Field Representative.

The work progress will be quantified by the Subcontractor, and approved by the Resident Engineer on a monthly basis. The Subcontractor will submit monthly invoices incorporating the Resident Engineer's approved quantities.

Subtask 2-6 Change Orders and Procedures for Claims Review

Change Orders will be administered in accordance with USEPA standard procedures and Claims and Disputes will be handled in accordance with TAMS' standard procedures. Both sets of procedures have been incorporated into the subcontract documents and are attached to this document for information.

Subtask 2-7 Disputes

The two parties will be free to pursue disputes which cannot be settled by mutual agreement through mediation, arbitration or litigation. TAMS' policy is to make every effort to avoid such disputes and will pursue alternative procedures which are in the best interests of both TAMS and the government.

Subtask 2-8 Final Inspection

At the completion of construction, a final Inspection of the work will be scheduled. This Inspection will be attended by TAMS' Key Project personnel and Subcontractor's Project Manager and Superintendent.

The Final Inspection will be performed in conjunction with USEPA, the State, the Town of Catskill and/or their representatives. The Final Inspection will include a walk-through of the entire Project to determine the Project completeness and consistency with the approved design. During the Inspection, all equipment will be operationally tested and a determination will be made whether the new water supply system is operational as a whole.

Upon the Inspection, if necessary, a check list of items remaining to be completed will be issued to the Subcontractor. Only when the Resident Engineer has verified that all items have been properly addressed, will a Notice of Completion be issued.

The Notice of Completion will indicate that the remedial action has been completed in compliance with the approved design and that the constructed water supply is operational.

5.3 Task 3 Post Construction Management

Subtask 3-1 Drawings of Record

The Subcontract Drawings and shop drawings will be marked-up by the Subcontractor to reflect the actual field condition and the performed work. Reproducible copies of these drawings will be provided to the USEPA.

Subtask 3-2 Community Relations

Upon completion of the work it is anticipated that a public meeting will be held to inform the Community of the Project accomplishment. TAMS will provide technical support in preparing for the Meeting and will attend the Meeting.

Subtask 3-3 Final Measurement and payment

After the final Inspection and Site Closure TAMS' Resident Engineer will verify all quantities and items of work. Payment for the work not included in monthly interim payments will be invoiced by the Subcontractor upon issuance of the Certificate of Completion.

Subtask 3-4 Remedial Action Report

Within 30 days of the Notice of Completion TAMS will issue a draft Remedial Action Report where the construction activities will be summarized and where any relevant issues will be addressed. The Report will also summarize Construction Costs including claims and disputes resolutions. The Drawings of Record will be incorporated in an Appendix to this Report.

The Remedial Action Report will include the following:

- Documentation that all the terms or specifications contained in the Design documents have been met.
- Verification that all construction equipment and materials have been removed from the areas of construction and that those areas have been restored.
- A certification by a qualified professional engineer licensed by the State of New York that the remedial action has been completed in conformance with the requirements of the Design documents and that the new water supply system is fully operational.

Subtask 3-5 Warranty Period

At the completion of the work, the twelve month warranty period will begin. During that period, TAMS' Site Manager will regularly contact the Superintendent of the Village Department of Public Work to verify that the newly constructed water supply system operates as expected. Two visits to the appropriate authority are anticipated. The Subcontractor Performance Bond will be released at the end of this period, if the water supply system is operational as a whole.

6. SCHEDULE

The Subcontract Documents prepared for bidding purposes were sent to twenty three interested bidders on September 3, 1991. The mandatory site visit was held at the AT site on September 10, 1991. Among the eight potential Bidders present at the site visit, five submitted bids on September 20, 1991.

The bids were analyzed and verified and a Subcontract was awarded to F.G. Compagni Construction Company, Inc. on October 16, 1991.

Following the review by NYSDOH and the Village of Catskill, significant changes to the design were required. These changes have been communicated to the Subcontractor under Modification No.1.

A Notice to Proceed was given on December 16, 1991. The completion of construction is anticipated in November 1992. Figure 2 is a bar-chart showing the anticipated Project Schedule. During the construction activities, work schedule is anticipated to be five eight-hour days per week. The bar chart reflects the time spent on negociation between Conpagni and TAMS which at the time of this writing have not been concluded.

7. KEY PERSONNEL

J.-P. Minois, P.E.	Senior Civil Engineer	Site Manager
B.St.J. Styer, P.E.	Principal Civil Engineer	Subcontractor Administrator
J. Lombardo, P.E.	Senior Civil Engineer	Resident Engineer
K. Coghlan	Community Relations Specialist	Community Relations

8. COST CONTROL

TAMS planned staffing, estimated level of effort and costs for the work assignment are being submitted under separate cover.

Actual hours worked on each task and costs will be compared to work plan estimates on a bimonthly basis by both the Program Manager and the Site Manager for the assignment. Subcontractor monthly payment will be assessed by the Resident Engineer and reviewed by the Subcontract Administrator and Site Manager.

Each month the ARCS Contract Manager will compile all charges and costs for the project and prepare an invoice. Monthly progress reports will also compare actual costs to estimated costs.

9. SUBCONTRACTING PLAN

The implementation of the Interim Remedial Action will be subcontracted in accordance with Paragraph 5 - Scope of Work of this Work Plan and the Prime Contract between the USEPA Region II and TAMS Consultants, Inc.

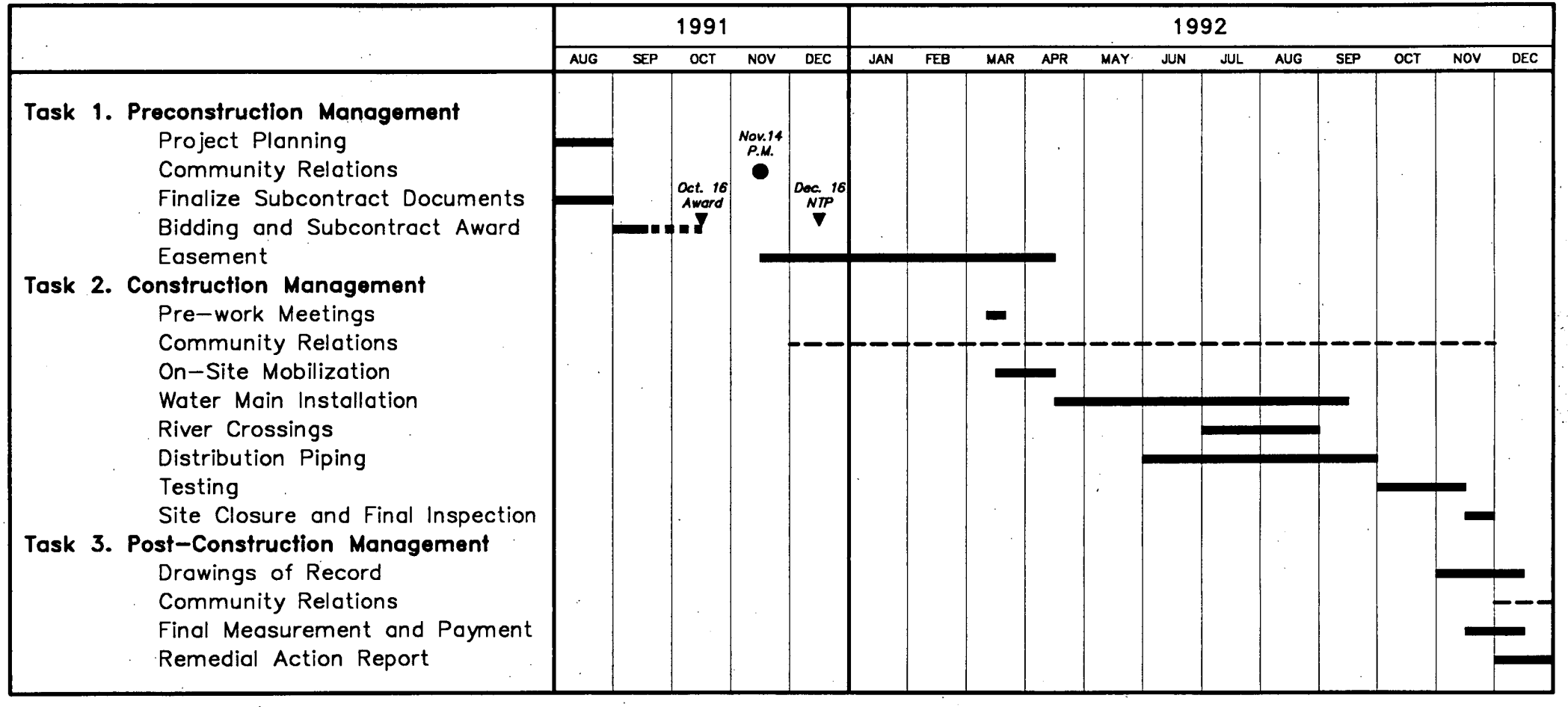
The surveying services will be subcontracted to GEOD Corporation.

10. DOCUMENT PRODUCTION AND DISTRIBUTION

TAMS will prepare and submit to the USEPA's Remedial Project Manager the following documents:

- Work Plan
- Remedial Action Report.

Ten (10) copies of these documents will be distributed to the USEPA.



AMERICAN THERMOSTAT SITE
REMEDIAL ACTION – WATER SUPPLY
PROJECT SCHEDULE

FIGURE 2

APPENDIX A

RESUME OF KEY PERSONNEL

Education National Engineering School of Hydraulics, Engineer Design, 1978 (France)
Special Course: Hazardous Waste Site Safety Training

Registration PE - New York

Experience

1980-date Senior Engineer - TAMS CONSULTANTS, Inc. Project Manager for development of a comprehensive water management plan at a 400-acre sanitary and hazardous waste disposal site located in Niagara Falls, New York and operated by CECOS International. Conceptual plans, specifications and costs for improvement work and stormwater controls developed include designs for landfill alignments, stormwater channels, retention basins, leachate collection system, culverts, weirs, and gated outlets.

Site manager responsible for Remedial Design of an abandoned pesticide manufacturing facility located in New Jersey. Design includes site grading, surficial capping, and controlled release of an uncontaminated runoff.

Project Engineer for the remedial design of Gloucester Environmental Management Services Landfill (Superfund Site) New Jersey Responsible for the hydrologic studies, plan and specifications for construction of runoff control structures.

Structural and hydraulic engineering services for development of tank farm demolition plans and specifications for Bridgeport Rental and Oil Services (BROS) Superfund Site, New Jersey.

Project Engineer for development of plans and specifications for the Black and Bergholtz Creek Remediation (near Love Canal) including digging of dioxin contaminated sediment.

Established bid documents for Peligre Dam repair work, Haiti, in accordance with World Bank requirements. Project concerned mainly rehabilitation of stilling basin concrete floor and underwater repair of trashrack structures. Participated in the negotiations leading to final contractual documents. Field Engineer in charge of supervision of concrete repair at Peligre Dam.

Member of Small Hydro group preparing prefeasibility and feasibility studies and FERC license applications for hydroelectric projects from 1 MW to 60 MW. Assisted in the planning and layout off hydraulic structures, analysis of stream flow records, and estimates of recoverable energy including the review of alternatives.

Hydraulic studies included preliminary design for flow in canals and pressure conduits. Work on quantities an cost estimates for several hydroelectric projects.

Design of a 10-foot diameter steel penstock and bifurcations for 5 MW Ashokan hydroelectric project. Hydraulic transient studies of small hydroelectric project in Kensico and Ashokan, New York.

Preparation of layouts and comparative cost estimates for penstocks, bifurcations and manholes for power development up to 1,600 MW at Tarbela Dam Project, Pakistan. Hydraulic transient studies for 1,600 MW development at Tarbela.

1978-1980 Hydraulic Engineer - Bergerson S.A., Paris, France. Performed laboratory tests of centrifugal and mixed-flow pump models including detailed mathematical analysis of results. Determined pump speed, size and setting; and plotted performance curves.

Design large scale centrifugal pumps using laboratory tested model for Koeberg nuclear power plant, South Africa, and pumping stations at Choisy and Nice, France.

1978 Thesis Project. Concept and design of twenty small dams (5 to 10-meter high) for control of riverbed erosion associated with stormy water runoff in Northern French Alps.

Education University College London, B.Sc. (Engineering) 1960

Registration Chartered Engineer, M.I.C.E.-United Kingdom

Experience

1979-date TAMS. Senior Contracts Engineer responsible for review and analysis of contractor's claims, preparation of draft Engineer's Decisions, checking and approval of final accounts for Tarbela Dam Project, Pakistan. Preparation of specifications for North Warning System, North America. Bid and contract documents, technical specifications, analysis of contractor's claims and expert witness at arbitration hearings for Delaware and Raritan Canal Capital Improvement Program, New Jersey. Contract documents, technical specifications, and cost estimates for Tank Farm Demolition and Lagoon Hazardous Waste Cleanup (Superfund) Project, Bridgeport, New Jersey, and Love Canal Project, Niagara Falls, New York, and GEMS Landfill Closure, Gloucester Township, New Jersey. Review of and recommendations for revising standard construction contract bidding and change order procedures on behalf of Government of Philippines Economic Support Fund Secretariat and USAID (TDY assignment). (1984-date)

Head of Claims and Change Orders Division for Tarbela Dam Project, Pakistan. Responsible for measurement, monthly pay certificates, drafting and negotiation of change orders, analysis and negotiation of claims. The above responsibilities related to tunnel inlets, tunnel outlet flip bucket, spillway plunge pools, excavations and lining of adits, exploratory drilling, drilliing and grouting, rock face stabilization, earth and cellular steel cofferdams, road construction, "rollcrete" construction, etc. (1979-1984)

1977-1979 Brian Colquhoun and Partners, London. Senior Coordinating Engineer for evaluating of Contractor's prequalifications for Sudan Airports Project; coordination of design and construction, negotiation of change orders and claims for Kuwait Naval Base. Participated in the re-design of breakwaters, dynamic compaction, cathodic proteciton of jellies and ship lift.

1974-1977 Styer Construction, (Pty) Ltd. Managing Director. Projects included reservoirs, water purification works, etc. Responsible for bid preparation, site engineering and management, preparation and negotiation of claims, financial control of company including negotiation of subcontractors, obtaining bonds and insurances, leasing, purchasing, etc.

1971-1974 Campbell, Berstein and Irving. Resident Engineer responsible for supervision of inspectors, measurement, certification, claim assessments, etc. for six separate contracts on Caledon-Bloemfontein Water Supply Scheme (Orange River Project) including 4 miles of 489-inch diameter steel pumping main, 70 miles of 48-inch diameter prestressed concrete gravity main (pipes manufactured on site), pumping stations, purification works, reinforced concrete reservoirs, etc.

1970-1971 Floor S.A. Pty Ltd. Senior Construction Engineer responsible for construction of new oil refinery. Supervision of civil subcontractor's work on dikes, surface drainage, pump stations, reinforced concrete foundations.

1968-1970 TAMS, Pakistan. Office Engineer for the Tarbela Dam Project, responsible for administration of site design office and coordination with New York design office, approval of Contractor's drawings, etc.

1967-1968 R.H. Cuthbertson and Associates, Edinburgh, Scotland. Design Engineer for design of pipelines and embankment remedial works for Talla Reservoir, Edinburgh.

1964-1967 Binnie and Partners. Section Engineer, Pakistan, Mangla Dam Project. Design review, liaison with Contractor, preparation of drawings and estimates for change orders.

1960-1964 John Laing and Sons, Ltd. Senior Site Engineer, United Kingdom. Quality control scheduling for multi-story office buildings, river diversion works, etc.

Design Engineer, London. Design of temporary shoring for deep excavation; beams, slabs, columns for multi-story office buildings, etc.

MEMBERSHIPS

Member, Institution of Civil Engineers, United Kingdom.

Education

Douglass College, BA, English Literature, 1965
Michigan State University, Graduate Courses in Education, 1967-1968
Special Course: Hazardous waste site safety training (40 hr)

Experience

1989-date Community Relations Specialist - TAMS CONSULTANTS, Inc. Ms. Coghlan is responsible for establishing and maintaining community relations activities for EPA ARCS Superfund Cleanup Sites, including direction of EPA Community Relations Plans, contact with members of affected community and EPA officials, preparation and coordination of community meetings, distribution of information to interested parties, and interviewing of local residents. Representative assignments include:

Kauffman-Minteer Remedial Investigation, Jobstown, New Jersey. Responsible for establishing community relations activities and plan for a Superfund site, contact with local officials and residents, coordination of involved parties for community interviews, site visits, and public meetings.

Hertel Landfill Cleanup Site, Plattekill, New York. Wrote draft and final community relations plan according to EPA ARCS Superfund guidelines. Served as liaison to the local community and EPA officials, organized town meetings concerning activities and issues related to the remedial investigation/feasibility study of the site, and distributed fact sheets and other community relations-oriented literature.

1986-1989 Project Manager - Salomon Brothers, Inc., New York. Responsible for a $25 million Wang and microprocessor hardware base, including user support and vendor management responsibilities.

1983-1985 District Manager - AT&T Information Systems, Parsippany, New Jersey. Responsible for coordinating systems planning for data systems divisions involved in developing a nationwide billing systems. Supervised $350 million budget and handled personnel activities for 400 employees and consultants.

1972-1983 New York Telephone, New York. Managed several online computer centers and developed and implemented a corporate Change Management System. Supervised over 130 management and nonmanagement employees in a production environment handling customer telephone service order processing. Represented New York Telephone at community affairs events and delivered presentations at meetings and conferences.

APPENDIX B

ARCS CONSTRUCTION CONTRACT

MODIFICATION PROCEDURES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

March 27, 1991

E. Patrick Sorenson, Ph.D.
TAMS Consultants, Inc.
655 Third Avenue
The TAMS Building
New York, New York 10017

SUBJECT: ARCS CONSTRUCTION CONTRACT MODIFICATION PROCEDURES

Dear Dr. Sorenson:

The purpose of this letter is to transmit a copy of OSWER Directive No. 9355.5-01/FS, ARCS Construction Contract Modification Procedures and also to state Region II procedures in this regard.

The directive describes and sets forth the technical reviews and administrative procedures required to process change orders in Remedial Action construction projects which are encountered during the performance of remedial action subcontracts engaged under EPA's ARCS contracts.

Ten(10) steps in the procedure are shown in the flow chart in Exhibit 2 and described in the two pages preceding the exhibit.

Step 6 indicates that for changes estimated to be under $25,000, the ARCS firm engineering design and estimate of the work will be the sole basis for requesting and negotiating a proposal for the work from the constructor. Step 5 indicates that after a price has been negotiated with the constructor, the changes will be reviewed and concurred with by the Contracting Officer with the support of the Regional Project Manager(RPM) and the Design and Construction Advisor(DCA). In Region II, the CO's approval of the proposed change is based on the recommendation of the Contracting Officer's Technical Representative(COTR). The COTR, Luis R. Lopez, functions under the title of Design and Construction Manager(DCM) in the Contracts Management Section. The COTR supports the RPM and the CO by providing technical and cost analyses of all changes to the work.

Steps 5 and 6 indicate that for changes expected to cost over $25,000, EPA and the ARCS firm will reconcile the difference between their respective estimates prior to steps 7 and 8,

Request/Review of Proposal and Negotiations, respectively. In other words, EPA approval of the ARCS firm's price negotiation objective is required prior to the ARCS firm requesting a proposal from the constructor and negotiating a final price.

I would like to emphasize compliance with this procedure, in particular, for changes over $25,000. The ARCS Prime Contractor must obtain concurrence from the CO prior to requesting a proposal and negotiating a final price with the Constructor. The CO will not approve any request for modification of a subcontract over $25,000 for which the ARCS firm negotiating basis not been approved by the EPA CO. Failure to comply with this procedure may result in the ARCS firm having to renegotiate the settlement of the change order price with the constructor. This situation is not desirable, since it can adversely affect the credibility of the ARCS firm in future negotiations with the Constructor.

It is expected that the enclosed document will help the ARCS Contractors understand the construction contract modification procedures. You are expected to apprise all your subcontractor(s) of these procedures.

A better understanding of these procedures by all parties involved shall result in a more efficient system where the proposed contract actions will be expeditiously processed.

It is, therefore, the ARCS contractor's responsibility to appropriately involve and apprise Mr. Lopez as soon as a change order is identified during the implementation of a remedial action subcontract. Mr. Lopez can be contacted at (212) 264-9005.

Should there be any questions, please feel free to contact me at (212) 264-2221 or Luis R. Lopez at (212) 264-9005.

Sincerely,

M. Shaheer Alvi, P.E., Chief
Contract Management Section
Emergency and Remedial Response Division

United States Environmental Protection Agency | Office of Emergency and Remedial Response Washington, DC 20460 | Directive: 9355.5-01/FS

Superfund | September 1989

EPA

THE HAZARDOUS SITE CONTROL DIVISION'S
DESIGN AND CONSTRUCTION MANAGEMENT GUIDE SERIES

ARCS CONSTRUCTION CONTRACT MODIFICATION PROCEDURES

During the performance of a construction project it is often necessary to modify the contract to allow changes in the work which are required by actual conditions at the site. These contract modifications are accomplished either through bilateral modifications, which result in "supplemental agreements" to accomplish the work, or through unilateral modifications, which result in "change orders" to the constructor to accomplish the work.

This document describes the contracting relationships, as well as technical reviews and administrative procedures required to process supplemental agreements and change orders for changed work in Remedial Action construction projects which are subcontracts under EPA's ARCS contracts. These procedures are orientated towards fixed price contracts. Contract modifications in time and materials contracts will differ. These procedures do not cover the situation where the need for the change is in dispute. Disputes and claims will be presented in a subsequent guidance. Assistance with the implementation of these procedures may be requested from the Design and Construcion Management Branch in HSCD.

RESPONSIBILITIES AND AUTHORITIES

The construction contracting relationship under ARCS involves two distinct spheres of authority. The first is the contractual relationship between the ARCS prime contractor and the subcontractor for construction. For the sake of simplicity, the subcontractor for construction will be called the "Constructor." The second sphere of authority is the contractual relationship between the ARCS prime contractor and the Federal Government. All changes to ARCS construction work will involve actions at both the subcontract and the prime contract level.

Within the first sphere of authority at the subcontracting level, the authority to approve changes to the work will reside with a designated senior member in the ARCS firm. The Federal government is not a direct party to any ARCS subcontract, and therefore cannot direct or order the Constructor to accomplish changed work.

The procedures used by the ARCS Construction Management Team for processing changes will also vary depending on the size and complexity of the construction project and will reflect the internal management structure of ARCS firm. On large construction projects the team may include a Construction Manager, a Resident Engineer, a Construction Representative or Construction Inspector, various technical review and design engineers, and other support staff. In a case such as this, the Resident Engineer and various technical review and design engineers may be involved in analyzing and negotiating a change, but the authority to approve would reside only with a senior person within the ARCS firm who has the authority to commit the ARCS firm to additional work and costs in the subcontracts.

Within the second sphere of authority at the prime contract level, the ARCS firm must obtain review and approval from the Federal Government, within the context of the ARCS Work Assignment, for any changes in the work. The only person who has authority within the Federal Government to approve changes to the work is the EPA Contracting Officer. Various technical and program staff who act as the Contracting Officer's Technical Representatives (COTRs) provide support for the Contracting Officer's decisions to approve changes.

For each ARCS construction project the Environmental Protection Agency (EPA) will designate an experienced construction COTR who is a licensed professional engineer with substantial construction management experience. This construction COTR will function under the title of Design and Construction Advisor (DCA) and will support the Remedial Project Manager (RPM) by providing technical and cost analyses of all changes to the work. The role of the DCA will be discussed in further detail below. The EPA RPM will review changes to insure that the environmental criteria of the remedy are met, and will also administer any impacts on the Work Assignment budget and schedule.

CHANGES IN CONSTRUCTION

There are four primary reasons for changes in Construction Contracts within the general scope of the work:

(1) To provide the ARCS Construction Manager the flexibility to accommodate actual field conditions or interpretations of the plans and specifications as they are encountered during the progress of the work. This flexibility may include acceleration of performance.

(2) To allow the ARCS Construction Manager the means to order changes, or to allow the Constructor the means for proposing changes which will result in more efficient performance, or in a finished product which is of an improved quality.

(3) To allow for the purchase of additional work within the general scope of the contract which will meet the government's needs in obtaining a remedy at the site.

(4) To provide the means by which the Constructor may obtain equitable adjustments for costs resulting from constructive changes.

To be "within scope" the work: (1) should be essentially the same as the type of work originally contracted for, (2) should be for items that could be reasonably within the contemplation or expectations of the contracting parties, and (3) should not alter the nature of the thing to be constructed.

Immediate Action Changes Orders: Circumstances will sometimes require the ARCS firm to direct the Constructor to proceed with work to address an immediate need at the site. This need may result from emergency situations or be required to avoid incurring delay costs. In these circumstances the ARCS Construction Management Team will order the Constructor to proceed with actions that are needed on an immediate basis, while the standard Contract Modification process is carried forward in the normal manner. The approval procedure for using the Reserve Fund to address circumstances which require immediate action is described in Step 4 of the Construction Contract Modification Approval Procedures section.

ARCS DESIGN AND CONSTRUCTION ADVISOR (DCA)

The DCA will be the Contracting Officer's construction engineering technical expert and advisor. As such, the DCA will provide to EPA engineering judgments, reviews and advice on technical decisions regarding construction issues including, but not limited to, the review and analysis of changes to the work that may arise in the course of construction. In situations where high costs or complex conditions exist, the DCA will obtain other resources necessary to provide the analysis. The DCA will travel to the site on short notice when construction issues warrant it. In addition, the DCA will attend appropriate milestone events such as the pre-construction conference, and the pre-final and final inspection.

The education and experience of the DCA should be heavily weighted in construction. The individual should be a degreed and registered Professional Engineer since the Government position needs to be based on professional engineering judgments to meet the standards of evidence that is likely to be submitted to an appeals board. Sources of DCAs for ARCS construction projects include:

- EPA REGIONAL SUPERFUND STAFF: If the EPA Regional office has staff with the appropriate qualifications, then these individuals could be assigned as DCAs, taking into consideration that due to the nature of active construction, the DCA duties would sometimes have to take precedence over all other duties.

- U.S. BUREAU OF RECLAMATION: The Bureau of Reclamation has made a commitment to make available construction engineers as DCAs in support of ARCS construction under an Interagency Agreement. Additionally the Bureau has agreed to provide access to their Claims Analysis Section in the Construction Division of the Denver Office. This Section is composed of a staff of 15 with a broad base of construction experience, change order analysis and claim resolution. The Claims Analysis Section will perform analyses of changes, make technical presentations and assist in the preparation of negotiating positions.

- ALTERNATE A&E FIRMS: An independent A&E firm, e.g. an ARCS firm with construction management experience which is not involved with the design or construction work assignment, REM 5 or REM 6 could provide DCA services for a specific site or across several sites. This approach will be further evaluated through pilots during FY 90.

TECHNICAL AND COST ANALYSIS OF PROPOSED CHANGES

Changes will be subject to technical and cost analyses at both the ARCS subcontract level and within the context of the Work Assignment at the prime contract level. A discussion of these functions at each level follows:

1. ARCS TECHNICAL AND COST ANALYSIS: Changes in construction work will be subject to an internal ARCS analysis. In simple, low-cost changes, the analysis may merely involve review of the engineering estimate and the definition of the work which was developed by the ARCS Construction Management Team.

For higher cost, more complex changes, the ARCS firm may use additional technical review and design engineers to analyze the proposed changed work during the development of the engineering estimate and definition of the work. These individuals may help develop and coordinate the negotiating position of the ARCS Construction Management Team. These activities will be accomplished in parallel with an analysis of the proposed change by EPA within the context of the Work Assignment at the prime contract level.

2. EPA TECHNICAL AND COST ANALYSIS: All changed work must be analyzed for approval by the EPA Contracting Officer. The Contracting Officer will rely on the RPM and the Design and Construction Advisor to provide these analyses. In the case of routine, low-cost changes, the analysis will be in the form of a quick turn-around review and approval of the change as negotiated by the ARCS firm with the Constructor. This will occur at Step 9, as described in the Construction Contract Modification Approval Procedures section.

For higher cost, more complex changes, the RPM will task the Design and Construction Advisor to initiate an analysis of the changed work and develop an Independent Government Estimate in parallel with the ARCS firm's actions to define and specify the work in preparation for negotiations. This process would be initiated at Step 5 of the Construction Contract Modification Approval Procedures section. The Design and Construction Advisor will utilize whatever resources are necessary to accomplish the analysis. If the changed work is of sufficient cost or complexity to warrant an in-depth analysis, then the Design and Construction Advisor may submit the change to the Claims Analysis Section of the Bureau of Reclamation Construction Division Office in Denver, Colorado.

WORK ASSIGNMENT MANAGEMENT AND ENVIRONMENTAL REVIEW

Within ARCS construction projects, all changes will be reviewed by the RPM to insure that the environmental criteria of the Remedial Action are maintained. These changes will also be reviewed for impacts on the Work Assignment budget and schedule.

When high cost changes occur that exceed the amount of funds in the Reserve Fund, then the Remedial Project Officer will revise the Work Assignment and arrange for the obligation of the additional funds necessary to pay for the change and replenish the Reserve Fund if necessary.

RESERVE FUNDS

When an ARCS construction contract is executed, EPA will adjust the Work Assignment funds to provide a Reserve Fund that equals 15% of the contracted price for the work. These Reserve Funds are set aside exclusively to cover the costs of changes to work under conditions discussed in this document and in accordance with the Changes clauses of the subcontract.

The approval to use Reserve Funds will be given to the ARCS firm by way of a Work Assignment Form which increases the expenditure limit. For situations that require immediate action, verbal approval to draw $25,000 or less will be given to the ARCS Construction Management Team by the EPA Contracting Officer or representative with the understanding that the appropriate paperwork will follow as soon as possible.

CHANGE ACTIVITIES

Exhibit 1 represents the activities that take place between a Construction Management Team and a Constructor when change is made in a construction contract. These activities begin with the identification and appraisal of the change, including a decision as to whether or not immediate action is required. The change is then defined by way of an engineering design. A proposal is the basis of negotiations to reach a final price and schedule for the work, and the Contract Modification is issued. For a small change, such as clearing and grubbing a small piece of land, all the activities could take place in a matter of hours. Very large, complex changes could require days or weeks to process because they require a greater effort to define and negotiate.

In all changes the same fundamental actions take place as shown in the chart. The ARCS Contract Modification Procedures described below is designed to tap into these actions at the appropriate times to provide Government oversight, approval and funding.

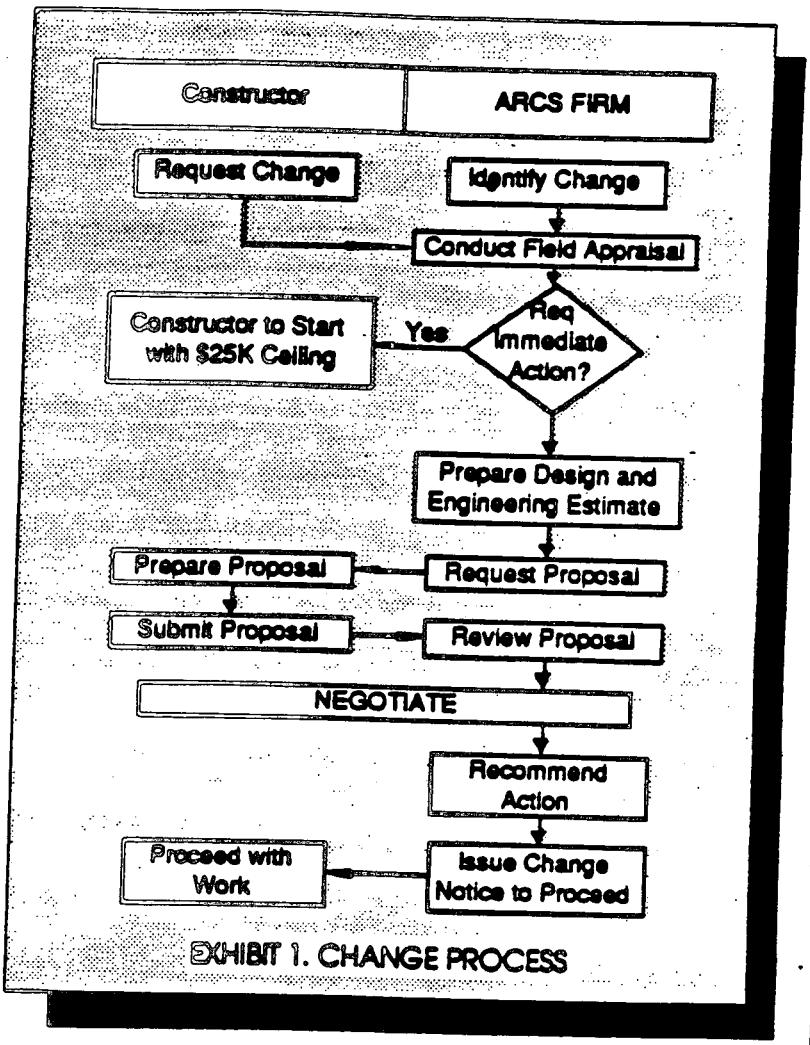


EXHIBIT 1. CHANGE PROCESS

CONSTRUCTION CONTRACT MODIFICATION APPROVAL PROCEDURES

The procedure is an expansion of the process shown in Exhibit 1 and includes the approvals necessary to insure the appropriate management of changes and to provide an adequate amount of control to EPA in the funding and execution of changes in the work. Ten steps in the procedure are shown in the flow chart in Exhibit 2 and are described below.

1. REQUEST OR IDENTIFICATION OF REQUIRED CHANGE: A recognition of the need for a change can originate with either the Constructor or the Construction Management Team's representative, usually the Resident Engineer. The Constructor may encounter conditions at the site which will require a change or the Resident Engineer, through normal tracking of the construction tasks, may observe conditions that may warrant a change in the work. At this stage the Resident Engineer will inspect the field conditions or other circumstances that have been identified as a potential change to the work.

2. FIELD APPRAISAL: In the second step the Resident Engineer develops a Field Appraisal of the scope and cost of the potential change. For small changes this might be a simple engineering judgment. For larger changes it would, at most, entail an informal estimate of the adjustments that would be required with regard to cost and schedule.

3. SCOPE DETERMINATION: This step actually occurs concurrently with the initial observation and appraisal of the potential change. The Resident Engineer evaluates the change with regard to the scope of the project. If the change is out of scope, then it would be directed to the RPM as a basis of a possible new or revised Work Assignment, but it would not be accomplished under the current contract.

4. IMMEDIATE ACTION DETERMINATION: For changes that require immediate action, the ARCS Construction Management Team will be permitted by verbal approval, or through a prearranged notification procedure with the EPA Contracting Officer, to draw increments of up to $25,000 from the Reserve Fund with which to initiate the work. The Constructor will then be ordered to proceed with actions that are needed on an immediate basis. While the work is progressing, the standard contract modification process will be carried forward in the normal manner. If the Constructor expends the initial $25,000 on a large change order before the total change is defined and negotiated, then subsequent increments of funds can be requested for circumstances that require the actions to continue.

5. INDEPENDENT GOVERNMENT ESTIMATE: Changes that are expected to cost less than $25,000 will not require an Independent Government Estimate. These changes will be reviewed and concurred with by the Contracting Officer with the support of the RPM and DCA after a price has been negotiated with the Constructor. This will occur at step 9 and will result in the issue of a Work Assignment Form permitting the ARCS Construction Management Team to draw down the Reserve Fund to pay for the work. The ARCS management of these small changes will be evaluated as part of the performance evaluation for award fee and for the assignment of future work.

Changes that will cost more than $25,000 will require an Independent Government Estimate. The Contracting Officer will rely on Design and Construction Advisor to either develop the estimate independently, or, if the change is large enough, to submit it to the Bureau of Reclamation Claims Analysis Section for analysis. The results of the analysis will be submitted to the EPA Contracting Officer. This Independent Government Estimate will serve as the basis for negotiations between EPA and the ARCS firm for the revision of the work assignment cost and schedule to accomodate the changed work.

6. ARCS ENGINEERING ESTIMATE: For changes estimated to be under $25,000, an ARCS engineering design and estimate of the work will be the sole basis for requesting and negotiating a proposal for the work from the constructor.

For changes estimated to cost over $25,000, the ARCS engineering design and estimate will be developed in parallel with the Independent Government Estimate. Differences between the ARCS estimate and the Government estimate will be negotiated between the ARCS firm and EPA. These negotiations should be completed before a final price is negotiated by the ARCS firm with the constructor.

7. REQUEST AND REVIEW OF PROPOSAL: The next step is for the Construction Management Team to submit the design to the Constructor to request a proposal for the work. The Constructor then prepares and submits his own proposal and estimate for the work for a pre-negotiation review.

8. NEGOTIATIONS: It is during this Step that the Construction Management Team attempts to negotiate an acceptable price and an equitable adjustment to the project schedule to accommodate the changed work. When agreement is reached, the ARCS firm will prepare the modification to the subcontract. This would be in the form of a supplemental agreement which will be signed by both a representative of the ARCS firm and the Constructor for concurrence by the EPA Contracting Officer with the support of the RPM and DCA.

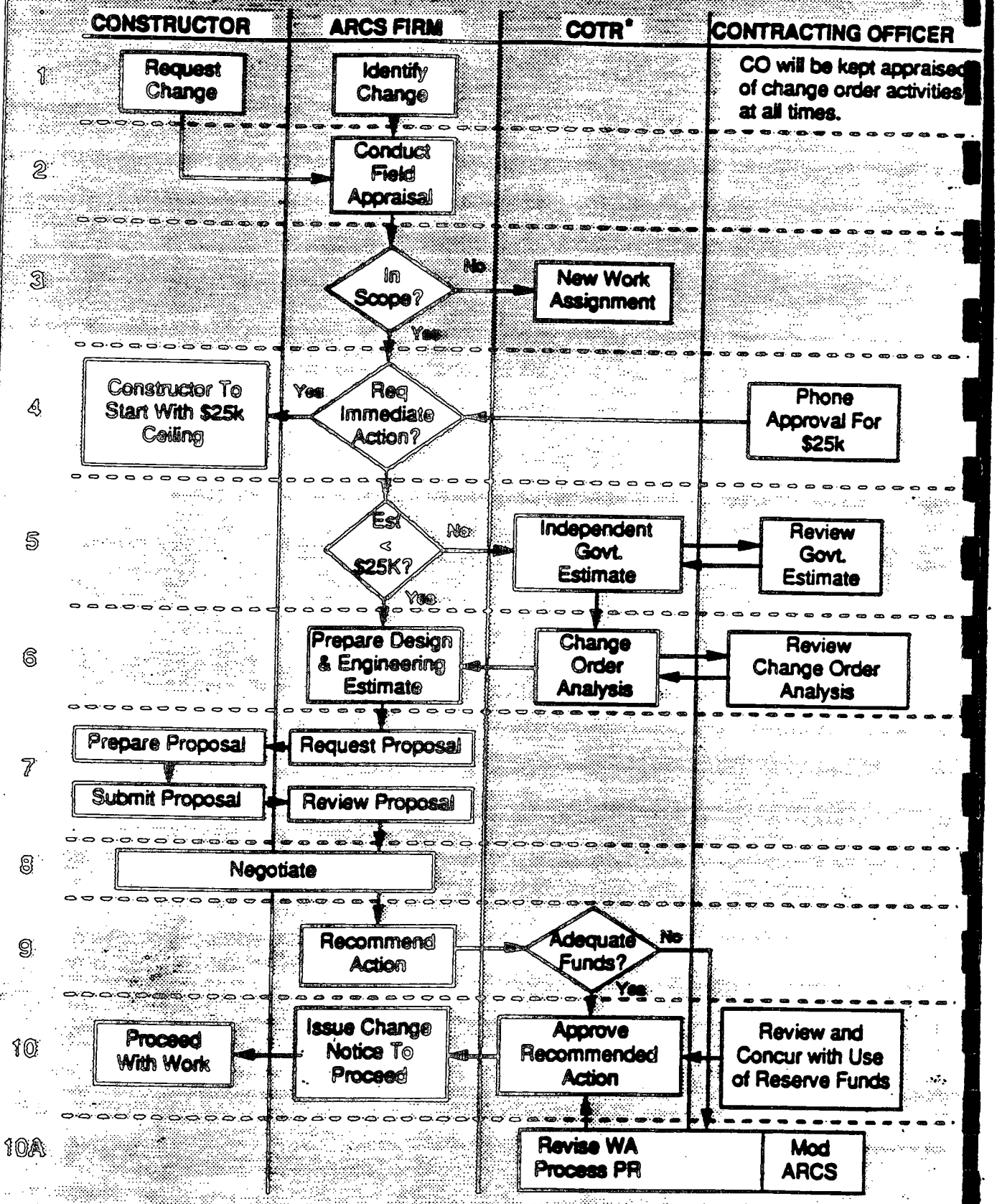
If agreement is not reached, the the ARCS firm will prepare a Change Order (unilateral modification) which would be in the same format of a supplemental agreement but would not require the signature of the Constructor. The Constructor would be directed to accomplish the work at the schedule and cost determined by the ARCS firm. The unresolved price and schedule would become the subject of a Claim to the ARCS firm if the Constructor wished to pursue the matter further.

9. ACTION RECOMMENDATION: At the end of the negotiation period, the Supplemental Agreement or Change Order is submitted to the Contracting Officer through the RPM for concurrence and verification of funding to cover the agreed to price.

10. APPROVAL AND MODIFICATION OF CONSTRUCTION CONTRACTS: The Contracting Officer reviews and concurs. If there are adequate funds in the Reserve Fund, the RPM will issue a Work Assignment Form permitting the ARCS firm to draw down the Reserve Fund and issue the change to the subcontract.

10A. MODIFICATION OF ARCS CONTRACT: If there are not adequate funds in Reserve to cover the negotiated cost, then the RPM will process a Work Assignment Form with a Procurement Request to obligate sufficient funds for the change and to replenish the reserve for future changes.

EXHIBIT 2 - CONSTRUCTION CONTRACT MODIFICATION PROCEDURES



* COTR - Contracting Officer's Technical Representative - Can include Project Officer, RPM, and Design and Construction Advisor (DCA), as appropriate.

APPENDIX C

CLAIMS AND DISPUTES

RESOLUTION PROCEDURES

CLAIMS AND DISPUTES RESOLUTION PROCEDURES

ARCS REGION II - EPA CONTRACT NO. 68-S9-2001
SUBCONTRACT NO. 5223-01

Objectives

The objectives of these procedures are to provide maximum opportunity for subcontractors to price work completely at the bidding stage and thereby minimize the submission of claims based on apparent inadequate or misleading information. It is expected that every effort will be made by both parties to have all work completed according to specification, on time and within budget.

Subcontractors are required to review their bids prior to submission to insure that no aspect of the work has been inadequately priced.

Subcontractors that best adhere to these procedures will receive preferential consideration in future solicitations.

Definitions

"Claim" means any request for payment of unscheduled work and/or an extension of time.

"Dispute" means any issue involving additional compensation or extension of time which has not been settled.

"Changed condition" means any physical condition or the effects of any known condition which could not have been foreseen at the time of bidding. A changed condition can have a beneficial effect as well as a detrimental effect on the performance of the work.

"Settled" means an interim or final disposition of a claim or dispute and does not amend the terms of the subcontract or the rights of the parties under the Agreement.

Submission of Claims

All claims must be submitted in writing as fully as possible and in a timely manner. Claims or partial claims which are incomplete or which are unreasonably delayed are subject to rejection; furthermore, if claims submissions are later found to have been deficient, previous claims settlements which could have been influenced thereby will be subject to further review.

Claims will initially be submitted to the TAMS site representative with a copy to the TAMS subcontract administrator stated on the subcontract cover sheet. Unless advised otherwise in writing, the TAMS site representative will have authority to settle claims which

do not have a financial impact in excess of $25,000, subject to a maximum of $25,000 in any one month. Larger claim amounts will only be settled by the TAMS subcontract administrator.

Additional Quantities

Additional quantities may result from inaccurate estimates of scheduled work. At the time of bidding the subcontractor is required to satisfy himself that the estimated quantities are reasonably consistent with the work described in the specifications and shown on the drawings. If there are apparent inconsistencies the subcontractor is required to notify the TAMS subcontract administrator who will determine if additional clarification and additional time for submission of bids is necessary. The results of such reviews will be communicated to all bidders.

Additional quantities resulting from inaccurate estimates will normally be measured without issuing a formal modification to the subcontract. Confirmation of such additional measurements will be considered a clarification as distinct from a modification to the subcontract. However, where such increases have significant impacts on the total cost either party to the subcontract may initiate or request the initiation of formal modifications; this also applies to reductions in quantities.

Additional quantities resulting from revisions to the scope of work, whether ordered verbally or in writing (e.g. by revisions to the drawings), will require a formal modification.

Revised Lumpsum and Unit Prices

Lumpsum and unit prices may be adjusted to compensate for the impact of changes in scheduled quantities; normally such adjustments will not be allowed unless changes in quantities exceed + or - 15% of the scheduled quantities.

Changed Conditions

TAMS reserves the right to review the entire subcontract when reviewing claims from a subcontractor which are based on changed conditions. When changed conditions appear to favor the subcontract, savings which result from such changed conditions will be computed and applied so as to offset other claims for increased costs or extensions of time which are based on changed conditions. Changed conditions will not be restricted to those which have been identified by the subcontractor.

Acceleration

Claims for acceleration or use of additional resources whether of labor, equipment or materials will not be accepted unless such measures were directed or approved by TAMS in writing beforehand or within a reasonable period after commencement of the accelerated work.

It is assumed that accelerative measures will reduce the unit cost of work unless it can be shown that the additional costs of mobilization and demobilization together with the additional costs of any inefficient use of resources will exceed such reductions.

Adverse Weather

Claims for extensions of time resulting from adverse weather will be limited to the total number of adverse weather days in each month in excess of the number of days indicated below. For the purposes of this subcontract, adverse weather is defined as daily precipitation equal to or greater than 0.5 inch and/or maximum daily temperature equal to or below 32° F.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(11)	(6)	(3)	(4)	(3)	(3)	(2)	(2)	(3)	(2)	(2)	(5)

Days will be computed in whole days. Only regular scheduled working days will be counted. Any day on which substantial progress is made towards completion of scheduled work for at least 50% of the day will not be counted as an adverse weather day. Any day on which substantial progress cannot be made towards completion of scheduled work for at least 50% of the day due to flooding on the site caused by adverse weather or from snow lying on the site in excess of 12 inches will be counted as an adverse weather day. Excess adverse weather days will be added to the approved work schedule in accordance with approved network analyses - extensions of time will not be granted to the entire subcontract unless the critical path is adversely affected.

TAMS reserves the right to direct the subcontractor to take abnormal measures to mitigate the effects of adverse weather in order to reduce the potential cost of delays to the subcontract. Failure to take such measures will be cause for reducing relevant claims for extension of time. Such abnormal measures could include the erection of flood barriers or special enclosures to continue work throughout the winter.

Claims for additional costs arising from adverse weather will be analyzed after settlement of claims for extensions of time.

* * * * *

APPENDIX D

MEMORANDUM OF AGREEMENT

IMPLEMENTATION OF ALTERNATE WATER SUPPLY TO HOMES AFFECTED OR THREATENED BY CONTAMINATION FROM THE AMERICAN THERMOSTAT SUPERFUND SITE

MEMORANDUM OF AGREEMENT

I. PARTIES

This MEMORANDUM OF AGREEMENT ("AGREEMENT") is hereby entered into between the Village of Catskill, Greene County, New York ("Village"), by and through the President of the Board of Trustees of the Village of Catskill and the United States Environmental Protection Agency, ("EPA"), by and through the Regional Administrator of EPA, Region II.

II. BACKGROUND

The American Thermostat Superfund Site ("Site") is located in the Town of Catskill, Greene County, New York. Contaminants at and from the Site have contaminated groundwater in the area and have contaminated or threaten to contaminate the wells which supply potable water to forty four (44) affected properties (the "affected properties"). These affected properties are listed in Attachment I. Fifty eight (58) connections are to be placed in the affected properties as specified by EPA's design documents and its Water Distribution Plan. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9601-9675 ("CERCLA"), on January 7, 1988, EPA issued a Record of Decision ("ROD") for the Site which selected the provision of an alternative water supply as the permanent remedial action to supply the affected properties with potable water. Through the ROD, EPA determined that extending the water supply from the Village of Catskill to the affected properties would best meet the objectives of CERCLA, including the objective to protect human health and provide a permanent solution to the problem of exposure and potential exposure of residents to contaminated groundwater.

III. PURPOSE AND INTENT

A. The Village agrees to assist EPA in its implementation of the remedy selected in the ROD by providing the alternate water supply to the affected residents. By this AGREEMENT, the Village agrees to provide the potable water to the affected properties and abide by the following terms and conditions. EPA, for the purpose of extending the Village water supply to the affected properties (as defined above), agrees to construct a water line extension (as defined below)

title to which will be transferred to the Village pursuant to the conditions specified below, pay a capital cost reimbursement charge of four hundred thousand dollars ($400,000) in accordance with the provisions of Ordinance No. 4 of the Water Rules and Regulations of the Village of Catskill, and abide by the following terms and conditions.

IV. TERMS AND CONDITIONS

A. The water line extension is defined as the entire new water main, all the branch piping, including all small diameter pipes that serve more than one customer, and all auxiliary equipment associated with such water line extension including the fire hydrants, ~~and any related equipment installed from the existing water supply to the property boundary of each affected home~~. Service piping is defined as piping that runs from the water line extension as defined above to each affected home or structure upon each of the affected properties.

B. The new Water District is the Town of Catskill Water District ("Town Water District") which was established on October 1, 1991, to serve the affected properties.

C. EPA agrees to transfer ownership of the water line extension to the Village upon completion of construction.

D. In accordance with section 02665, sub-section 3.04A.1. of the Subcontract for a Water Supply Project, American Thermostat Site, Catskill, Greene County, New York, September 1991, hydrostatic pressure and leakage tests will be conducted after completion of the pipeline installation, but prior to placing concrete covering and/or final connections, and concurrent hydrostatic pressure and leakage tests in accordance with AWWA C 600 will be conducted. At the time of this test, EPA will notify the Village so that a Village representative may be present during such testing.

E. EPA will notify the President of the Village Board of Trustees, c/o Carolyn Pardy, Village of Catskill, 422 Main Street, Catskill, New York 12414, when the water line extension is completed. By such time, EPA shall have provided to the Village a copy of the certification received from EPA's engineering firm that the project has been completed in accordance with the previously approved design plans and specifications. Both parties shall conduct a final inspection of the water line extension to determine that it is operating according to design specifications. The Village will

pass a resolution prior to the final inspection that the Village will accept the water line extension upon approval provided by the Village technical expert that the system is operating according to design specifications. EPA will ensure, for a period of one year from the date of completion of construction of the water line extension, that any material defects in materials or construction during such year will be cured by EPA, or its agents, contractors, or consultants, at no cost to the Village.

F. The Village will operate and maintain the water line extension as defined in IV. A. above to the same standard it maintains such equipment within the Village water supply district for as long as the Village or its successor, should it sell the water supply system to any other private or governmental entity, provides water to any user. The Village will not be responsible for the operation and maintenance of any service piping as defined in IV. A.

G. Should the Village sell or otherwise dispose of its water supply system, all terms and conditions of this AGREEMENT shall apply to any successor. Furthermore, any disposition by the Village of the water line extension, or any part thereof, shall be subject to any applicable federal law or regulation concerning the disposition of property constructed with federal funds, including, without limitation, 40 CFR Part 31.

H. Beginning on the date the Village accepts title to the water line extension, the Village will be responsible for repairs and/or reparations to the property owners for any damages to the private and public properties transversed by the water line extension as defined in IV. A. caused by water breaks, damage, malfunctions, or recklessness during operation and maintenance.

I. EPA will install one master meter as well as individual water meters to each residence receiving water within the new water district. The collection of payments for water usage will be arranged under a separate agreement between the Town of Catskill and the Village of Catskill prior to the payment of the capital cost reimbursement charge from EPA to the Village.

J. The Village will not discriminate in any way against the users in the Town Water District. Charges for water used by the Town Water District shall be in accordance with the rates adopted by the Village Board of Trustees for water users outside the Village limits. No other charges or surcharges, including but not

limited to operation and maintenance surcharges, will be levied against the users in the Town Water District. Rate increases which are levied against users in the Village will be applied in accordance with the formula relating to out-of-Village users in the Village Water Rules and Regulations on a non-discriminatory basis upon users in the Town Water District.

K. The Village will provide water to the Town Water District for a minimum of forty (40) years from the date the affected properties receive water from the Village. The Village will not reduce the supply of water to the Town Water District, unless it makes the same reductions on a per residence basis to its own residents. Thereafter, it is the Village's intention not to discontinue providing water to the Town Water District.

L. The Village will provide EPA with a copy of the billing agreement with the Town Water District.

M. Establishment of a method of dispute resolution to settle disagreements between the Town Water District and the Village shall be set forth in a contract between them prior to the payment of any capital cost reimbursement charge by EPA to the Village.

N. The Village will use the capital cost reimbursement charge of $400,000 to implement improvements to the Village water supply system in accordance with recommendations to be made at the completion of an engineering study that was required by the New York State Department of Health ("NYSDOH") and is currently being performed by the Village engineering firm and is anticipated to be completed in January 1992. All improvements will be performed in accordance with NYSDOH recommendations and will be subject to the approval of the NYSDOH. The Village commits that the improvements implemented will benefit all users of the Village water system, both in the Village and outside the Village. If the Village does not complete the improvements to the Village water supply system, EPA will take all appropriate actions to preserve its rights.

O. In reliance upon this AGREEMENT, EPA, through its agents, consultants and contractors, will make, after execution of this AGREEMENT, all necessary provisions for the construction of the water line extension to the affected properties. As referenced in paragraph III.A. above, EPA also has agreed to pay the Village a capital cost reimbursement charge of four hundred thousand

dollars ($400,000) pursuant to Ordinance No. 4 of the Water Rules and Regulations, Village of Catskill. This payment will be made in consideration of the Village's acceptance of the connection of the affected properties to its water supply system. By Resolution dated October 2, 1991, the Village Board of Trustees, for the Village, decided that this $400,000 capital cost reimbursement would be dedicated solely towards the effectuation of the water supply improvements described in subparagraph N, above. Said improvements are scheduled to commence prior to the connection of the affected properties to the Village water supply. Said improvements, however, will benefit the new users (including the residents of the affected properties) as well as the existing users of the Village water supply. EPA, therefore, subject to the reservation of rights contained in subparagraph N above, has agreed to make all necessary arrangements for the reimbursements of such capital costs to be made to the Village within thirty days of receipt of the agreements and contracts between the Village and the Town of Catskill which satisfy the requirements of subparagraphs I, L, and M above, in order to facilitate the Village's completion of such improvements.

V. WRITTEN COMMUNICATION

Written communication pursuant to the provisions of this Agreement shall be delivered or mailed as follows:

A. To the Village:

President of the Village Board of Trustees
c/o Carolyn Pardy,
Village of Catskill
422 Main Street
Catskill, New York 12414

Terry J. Wilhelm, Esq.
Village Attorney
327 Main Street
Catskill, New York 12414

B. To EPA:

New York/Caribbean Remedial Action Branch
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
Region II
26 Federal Plaza, Room 29-102
New York, New York 10278

Attn: Christos Tsiamis

New York/Caribbean Superfund Branch
Office of Regional Counsel
U.S. Environmental Protection Agency
Region II
26 Federal Plaza, Room 437
New York, New York 10278

Attn: Cynthia Psoras, Esq.

VI. EXECUTION

This AGREEMENT shall be effective when executed by both parties.

IN WITNESS WHEREOF the parties have executed this AGREEMENT on the dates attested to below. FURTHERMORE, the individual signing this AGREEMENT certifies that he is fully authorized to agree to the terms and conditions set forth above and to legally bind the party for which he is the signatory.

For the Village of Catskill

BY: _____ October 15, 1991

William McCord
President
Village of Catskill Board of Trustees

Date

For the Environmental Protection Agency

BY: _____ 10/15/91

Constantine Sidamon-Eristoff
Regional Administrator
Region II

Date

PROPOSED NEW WATER DISTRICT
INVENTORY OF PROPERTIES

FEB 91

SECTION	BLOCK	LOT	OWNER'S NAME	TYPE OF STRUCTURE	TYPE OF PREMISE	NUMBER OF FAMILIES	NUMBER OF EMPLOYEES/ RESIDENTS	COMMENTS / SPECIAL NEEDS
119.00	12	17	ALKER, KORNEL	1-STORY HOUSE	RESIDENTIAL	1	=====	NONE
				2-STORY STUCCO HOUSE	RESIDENTIAL	1	=====	SECOND HOUSE UNDER CONSTRUCTION
119.00	12	9	AMANNA, THOMAS P & JOAN	2 1/2-STORY WOOD HOUSE	RESIDENTIAL	1	=====	SWIMMING POOL
				SHED				WATER FOR HORSES IN BARN
				BARN	=====	=====	=====	
				MOBILE HOME	RESIDENTIAL	1	=====	
				SHED				
119.00	12	8.2	ARMAE INC (G. NICHOLSEN)	NONE	=====	=====	=====	VACANT LAND
119.00	12	7	BEACH, ALLEN E & THERESA	MOBILE HOME	RESIDENTIAL	1	5	NONE
				SHED				
			BINK, J.C. (TENANT)	MOBILE HOME	RESIDENTIAL	1	6	NONE
119.04	2	3	BENJAMIN, RAY G JR & SANDRA	1-STORY HOUSE	RESIDENTIAL	1	4	NONE
119.00	13	3	BERG, DIANE	HOUSE	RESIDENTIAL	1	=====	NONE
				BARN				
				TRAILER	RESIDENTIAL	1	=====	
				2 SHEDS				
119.00	13	6	BRANLEY, JOHN & MARY	HOUSE	RESIDENTIAL	1	2	NONE
				GARAGE				
				HOUSE	RESIDENTIAL	1	=====	
				2-STORY HOUSE	RESIDENTIAL	1	=====	
119.00	13	11	BRIGGS, ERNEST A	HOUSE	RESIDENTIAL	1	3	NOT INTERESTED
119.04	2	13	CACCAMO, FORTUNATO & MARGUERITE	1-STORY BRICK/VINYL HOUSE	RESIDENTIAL	1	2	NONE
				SHED				
119.00	13	9	CAREY, LORRAINE & JOHN	TRAILER	RESIDENTIAL	1	=====	NONE
				SHED				
119.00	12	4	CICHOCKI, STEVEN	2-STORY HOUSE	RESIDENTIAL/COMM	1	3	TWO WELLS ON PROPERTY
			(THE GREYSTONE MOTEL)	4 COTTAGES	RESIDENTIAL	4	=====	SWIMMING POOL
				MOBILE HOME	RESIDENTIAL			
				SHED				
119.00	12	13	CORNELL, ERIKA	2-STORY BARN	COMMERCIAL	=====	2	NONE
				HOUSE	RESIDENTIAL	1	2	
119.00	12	6	FORD, EDWARD	NONE	=====	=====	=====	VACANT LAND
119.04	2	1	FRANK, JULIUS	1-STORY BRICK HOUSE	RESIDENTIAL	1	=====	NOT CONTACTED FOR SURVEY

TAMS CONSULTANTS INC.

PROPOSED NEW WATER DISTRICT
INVENTORY OF PROPERTIES

FEB 91

SECTION	BLOCK	LOT	OWNER'S NAME	TYPE OF STRUCTURE	TYPE OF PREMISE	NUMBER OF FAMILIES	NUMBER OF EMPLOYEES/ RESIDENTS	COMMENTS / SPECIAL NEEDS
119.04	1	1	GOLDSTEIN, GERALD & ROSALIE	1-STORY BRICK HOUSE SHED GARAGE	RESIDENTIAL	1	2	NONE
119.00	12	22	GREENE, ROY	TRAILER	RESIDENTIAL	1	4	NONE
119.00	13	2	HIPPE, RICHARD C & ERNA	HOUSE GARAGE TRAILER	RESIDENTIAL	1	2	NONE
119.00	12	14	HOLLISTER, FRANCES	MOBILE HOME SHED	RESIDENTIAL	1	1 1	NONE
119.00	12	16	HOOK, GEORGE	1-STORY BRICK HOUSE SHED	COMMERCIAL	------	NONE PRESENT	1" COMMERCIAL USE
119.00	13	16		BRICK HOUSE GARAGE	RESIDENTIAL	1	2	2" REQUESTED FOR FUTURE COMMERCIAL USE; WANTS A LINE BROUGHT TO GARAGE; FOUNTAIN
119.04	2	5	HOPWOOD, HENRY JOSEPH & MURIEL	1-STORY HOUSE SHED	RESIDENTIAL	1	2	SWIMMING POOL
119.00	12	5.2	KATZ, WARREN	MOBILE HOME GARAGE	RESIDENTIAL	1	2	NONE
119.00	12	1	KORBA, STEPHEN & ETHEL	HOUSE	RESIDENTIAL	1	2	PROPERTY PARTIALLY LOCATED IN TOWN OF CAIRO
119.04	2	2	KUEVER, JOHN & LINDA	1-STORY VINYL HOUSE	RESIDENTIAL	2	7	2 FAMILY ATTACHED WITH GARAGE BETWEEN
119.00	13	12	LAIS, RICHARD R & DOROTHY D	1-STORY HOUSE SHED GARAGE	RESIDENTIAL	1	2	NONE
119.00	12	21	MALLIA, FRANK & MARIA GRAFF, WARREN (TENANT)	2-STORY BUILDING STORE MOBILE HOME	RESIDENTIAL COMMERCIAL RESIDENTIAL	2 ------ 1	4 1 2	NONE
119.00	13	7	MARIANI, SEBASTIANO ETAL (MARIANI'S HILLTOP)	HOUSE HOUSE HOUSE SHED HOUSE	RESIDENTIAL RESIDENTIAL RESIDENTIAL RESIDENTIAL RESIDENTIAL	1 2 1 1	2 ------ 2 ------	SWIMMING POOL IS NOT IN USE
119.00	13	10	MESSINA, ANGELO & ANGELINA	HOUSE GARAGE CONCRETE BLOCK BLDG.	RESIDENTIAL	1	2	NONE

TAMS CONSULTANTS INC.

PROPOSED NEW WATER DISTRICT
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FEB. 91

SECTION	BLOCK	LOT	OWNER'S NAME	TYPE OF STRUCTURE	TYPE OF PREMISE	NUMBER OF FAMILIES	NUMBER OF EMPLOYEES/ RESIDENTS	COMMENTS / SPECIAL NEEDS
119.04	1	3	MOFFETTONE, LARRY & KELLY MELODEE (THE CULVERT INN)	2-STORY WOOD INN GARAGE 9 CABINS	COMMERCIAL RESIDENTIAL	UNKNOWN 1	UNKNOWN *****	NOT CONTACTED FOR SURVEY THE CULVERT INN HAS BEEN UNOCCUPIED FOR THE PAST 3-4 YEARS
119.00	13	17	MOSKOWITZ, HARRY (FORMERLY AMERICAN THERMOSTAT)	2 1-1/2 STORY BUILDINGS 4 SHEDS	INDUSTRIAL	*****	UNKNOWN	NOT CONTACTED FOR SURVEY
119.00	13	18		ALUMINUM BUILDING	INDUSTRIAL	*****	UNKNOWN	
119.00	12	10	MUELLER, RICHARD M & BETTY	1-STORY HOUSE W/ GARAGE SHED	RESIDENTIAL	1	*****	NOT CONTACTED FOR SURVEY
119.04	2	4	MUGGEO, RICHARD G & CAROLE E	RAISED RANCH HOUSE	RESIDENTIAL	1	5	NONE
119.00	12	8.1	NICHOLSEN, GARY	NONE	*****	*****	*****	VACANT LAND
119.04	2	6	OSBORN, JACK & JANET	1-STORY BRICK HOUSE	RESIDENTIAL	1	2	THEY HAVE A SPRING, NO WELL
119.00	12	3	PRIPUTEN, PETER & JEAN	RANCH HOUSE	RESIDENTIAL	1	2	PROPERTY PARTIALLY LOCATED IN TOWN OF CAIRO
119.00	12	5.1	REGENSBURGER, HERMAN & MARY	MOBILE HOME	RESIDENTIAL	1	2	NONE
			GALLT, BARBARA (TENANT)	MOBILE HOME	RESIDENTIAL	1	*****	NONE
119.00	12	2	REHSELDT, PATRICIA	HOUSE 2 SHEDS	RESIDENTIAL	1	*****	NOT INTERESTED
				TRAILER	RESIDENTIAL	*****	*****	TRAILER IS BEING REMOVED
119.00	13	8	SCHMIDT, CHARLES & LILLIAN	TRAILER PLAY HOUSE GARAGE	RESIDENTIAL	1	7	NONE
119.00	13	21	SCHMIDT, JOHN C & BETTY JEAN	TRAILER WOOD GARAGE	RESIDENTIAL	1	3	NONE
119.00	13	13	SCHMIDT, JOHN & MARY HELEN	1-STORY HOUSE SHED	RESIDENTIAL	1	2	NONE
119.00	13	14		TRAILER WOOD BARN	RESIDENTIAL	1	*****	
119.00	13	15		BARN	*****	*****	*****	WATER FOR HORSES IN BARN
137.00	2	2	STATE OF NEW YORK	NONE	*****	*****	*****	VACANT LAND
119.00	13	4	TURAN, ANDREW & IDA MAE	1-STORY HOUSE SHED	RESIDENTIAL	1	2	NOT INTERESTED
				AUTOBODY REPAIR SHOP	COMMERCIAL	*****	1	
119.00	13	5		NONE	*****	*****	*****	VACANT LAND
119.00	13	22	UNKNOWN	NONE	*****	*****	*****	VACANT LAND
119.00	12	19	WERENCZAK, EDWARD P & MARTHA	2-STORY WOOD HOUSE BARN	RESIDENTIAL	6	*****	SWIMMING POOL
119.00	12	15	WILCZAK, EUGENIUSZ	OLD GAS STATION	COMMERCIAL	*****	*****	GAS STATION IS NOT ACTIVE
				MOBILE HOME	RESIDENTIAL	1	1	NONE

TAMS CONSULTANTS INC.